Environmental Management Software & Solutions

Convenient | Cost-effective | Compliant

RFID

A Foundation for Change

EnvironMax™

Evolution of Environmental Management:

The Quest for Information

1970s.....Late 1980s.....1990s.....2001+

Era	Compliance OR ELSE.	Pollution Reduction WHAT?	Pollution Prevention HOW?	Environmental Strategy WHY?	Environmental Security WHO & WHERE?

Checklists.....Engineering.....Information

Impact

- **$1 to $10 Spent on Environmental Management for $1 of Chemical Purchased**

- **$460 Billion Spent Annually on Chemicals**

ROI Categories

- **Financial**
  - "..incurred savings of $1.6MM, $5.7MM, $8.4MM and $7.3 Million over four years.."
- **Risk Management**
  - "..identified employee problems before chemicals purchased..first site in state with zero violations.."
- **Operational**
  - "..while increasing production 40% over four years, reduced waste by 63%.."
- **Managerial**
  - "..foundation upon which we obtained ISO 14000.."
- **Logistical**
  - "..reduced inventories 68%, hazmat acquisition 39%.."

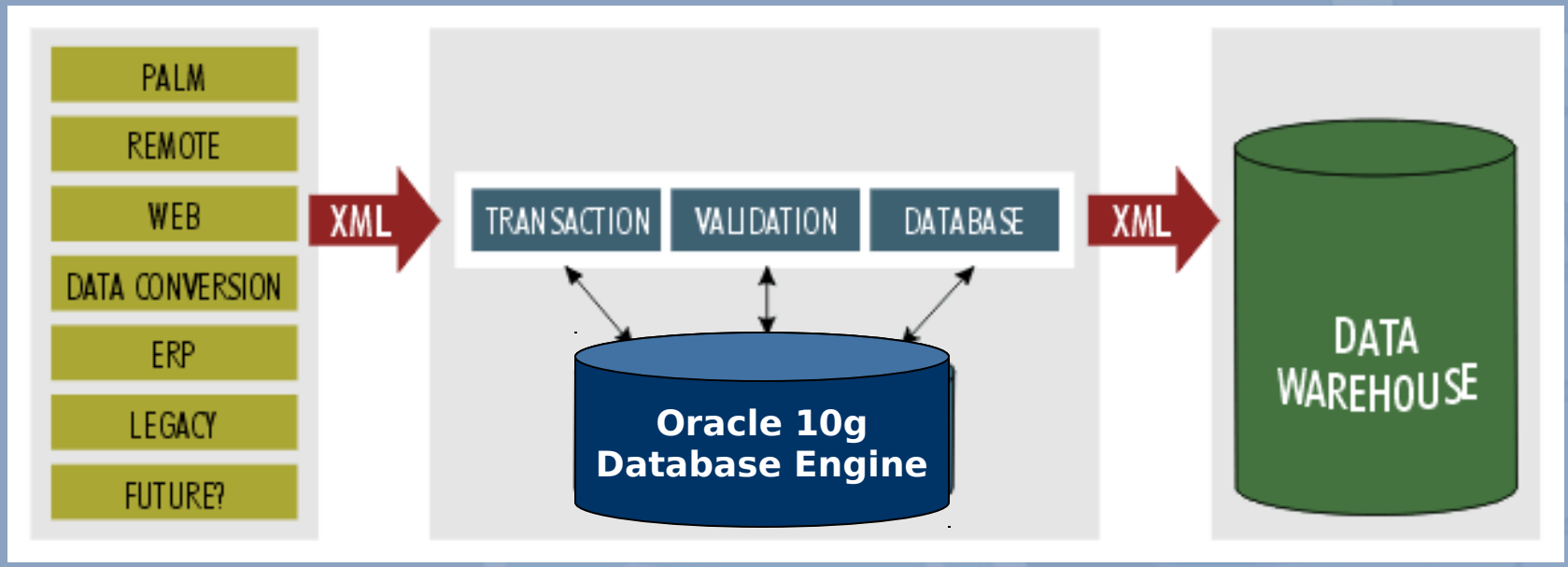
Total Transaction Management

PRE-ACQUISITION	LABEL & BARCODE	ISSUE & REUSE	WASTE	REPORTING
...tory can be pre-...orized before it is ...ed, allowing you to ... less costly or safer ...natives. You have ...visibility and control ...at comes onto your facility.	By labeling and barcoding inventory, you know what you have, where it is located, who is using it, and on what equipment it's being used. This allows you to track costs, reduce shrinkage, and take advantage of bulk purchases.	Bulk quantities can be broken into job-specific quantities. This reduces spillage, contamination, and employee exposure. Material not completely used can be returned for reissue.	Waste is tracked from generation through disposal. Automated manifests ensure accuracy, resulting in significantly reduced disposal costs. Comprehensive, World-wide waste tracking and reporting is now a reality.	EPA, OSHA, EPCRA, RCRA and site-specific reports are as simple as one click of the mouse. Without EnvironMax these reports can cost you tens of thousands of dollars each to prepare.

Information Capture Process

Handheld to Desktop

Web-Based Architecture

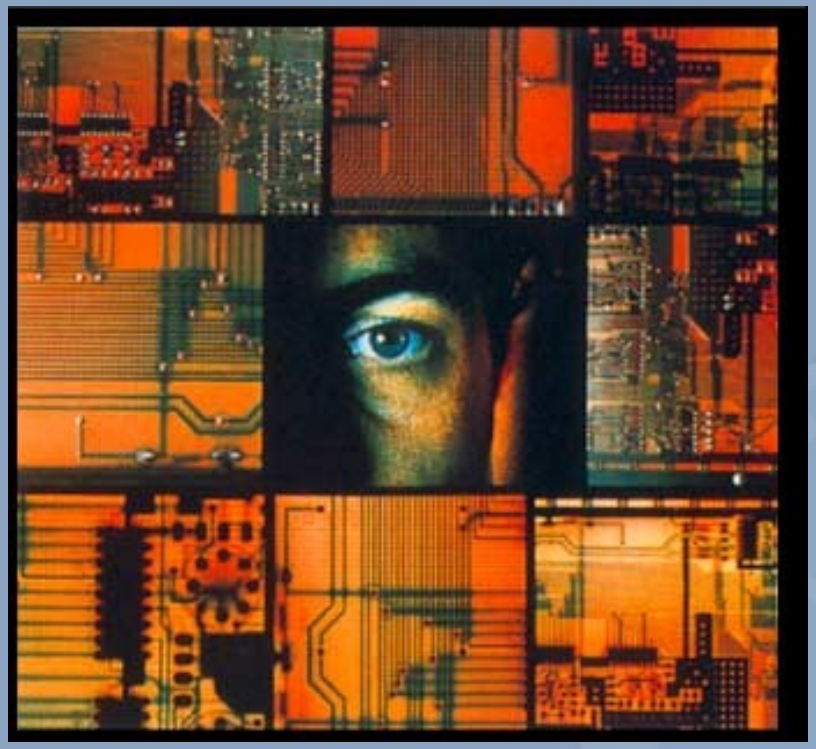


Source

Rules and Engine

Storage and Distribution

RFID History and Context



- Dates to WW II to Identify Ships & Planes
- Already in Use for 400,000 DoD Items
- Price from $60 to $.25 per Tag – Headed to $.05
- Typical Warehouse Implementation $400K
- DoD Mandates All Pallets and Cases by 2005

The RFID Imperative

The adoption of RFID technology is inevitable. Its transformational promise, huge. But the success of RFID in your business depends on your infrastructure.

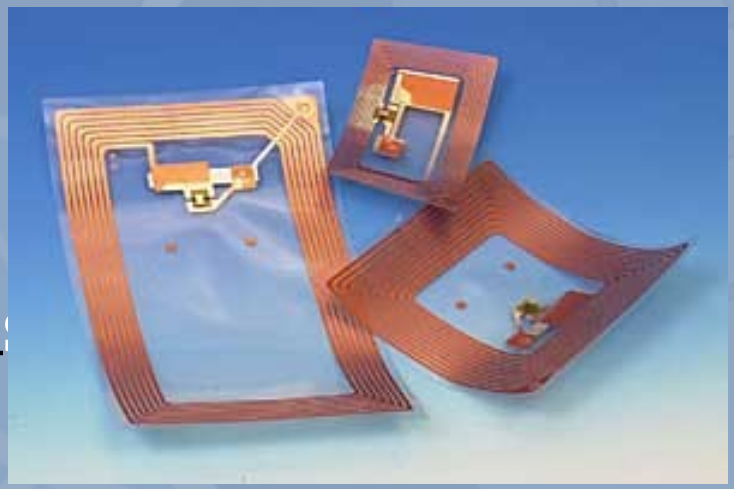
CIO Magazine - Dec 2003

Demands

- **RFID at the pallet and case level will have to be linked to warehouse management systems. RFID at the item level will touch virtually eve system in the organiza**

Why RFID Important to DoD

- A rapidly moving force needs dynamic battlefields. Important to know:
  - What we have.
  - Where it is.
  - And what is being u



RFID Technical Obstacles

- Radio Waves Absorbed by Liquids and Distorted by Metal
- Require Large Bandwidth and Data Warehousing
- For ROI Must Have Strong Data Plan
- Transition from Barcode to 13 Digit EPCs
- Create More Intelligence at the Edges of the Network

The New Problem

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“Mountains of Data”

“Oceans of Information”

“Riverumbers”

The RFID System

Trend: Real-Time Enterprise

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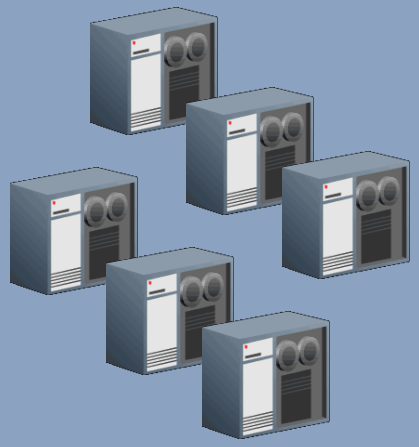
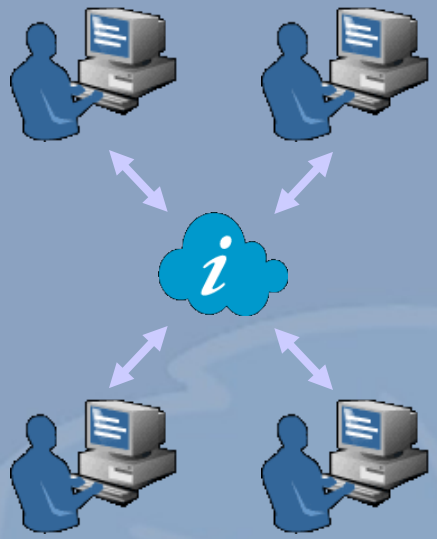
Data Processing



- Weeks
- Batch
- Megabytes
- Punch Cards
- Few People

Internet

(Still Happening)



- Days
- Request/Reply
- Terabytes
- Human
- Many People

Real Time

- Minutes
- Automated
- Exabytes
- Event Driven
- Beyond People

Information Quality Challenge

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- Manage large volumes of **data and events** in the most scalable, reliable, proven database.
- Provide the highest level of **security** for your data, while making it available to appropriate trading partners and customers.
- Integrate with your **existing** information, business processes, applications and data capture technologies.
- Easily add **new** information, business processes, applications and data capture technologies.
- Maximize **quality of service** with a common management framework through proactive monitoring and automated administration out to the edge.

Real-Time Enterprise Challenges

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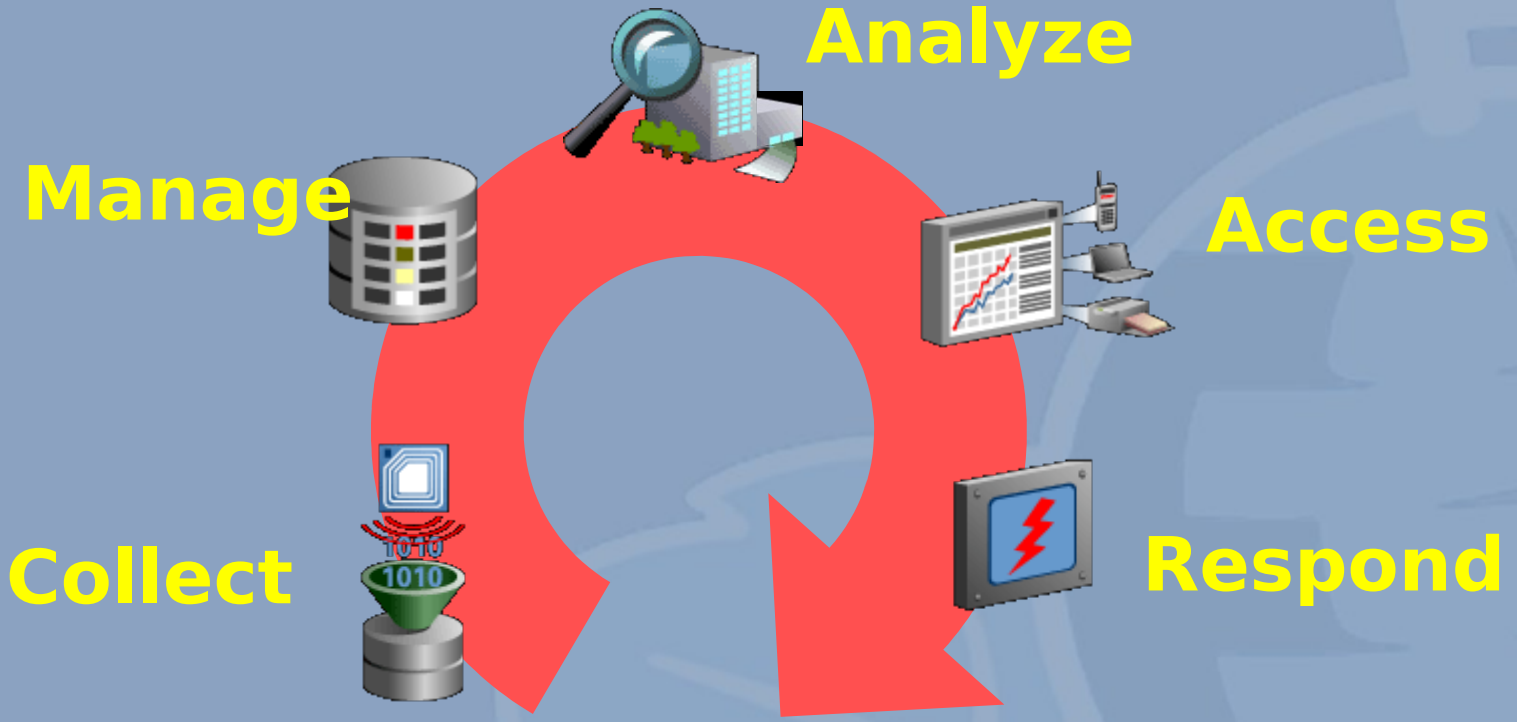

Oracle Sensor-Based Services

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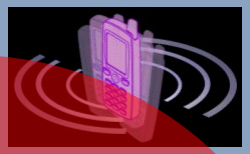


Alerts

Business Intelligence

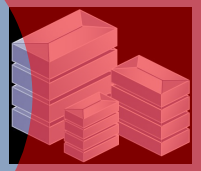
Portal

ACCESS

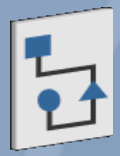
Information Access/ Visibility

Unified Workspace
Real-Time Collaboration
Responsive Enterprise

RESPOND



Applications



Business Process Monitoring

ANALYZE

Business Processes

E-Business Suite
Embedded Analytics
Event-Based Architecture

CAPTURE

Event Sources

Sensors, RFID, System Events

Edge Server

Data Collection, Cleansing, Dispatch

Database

Scalable Data Archive, Aggregration, Dissemination

Application Server

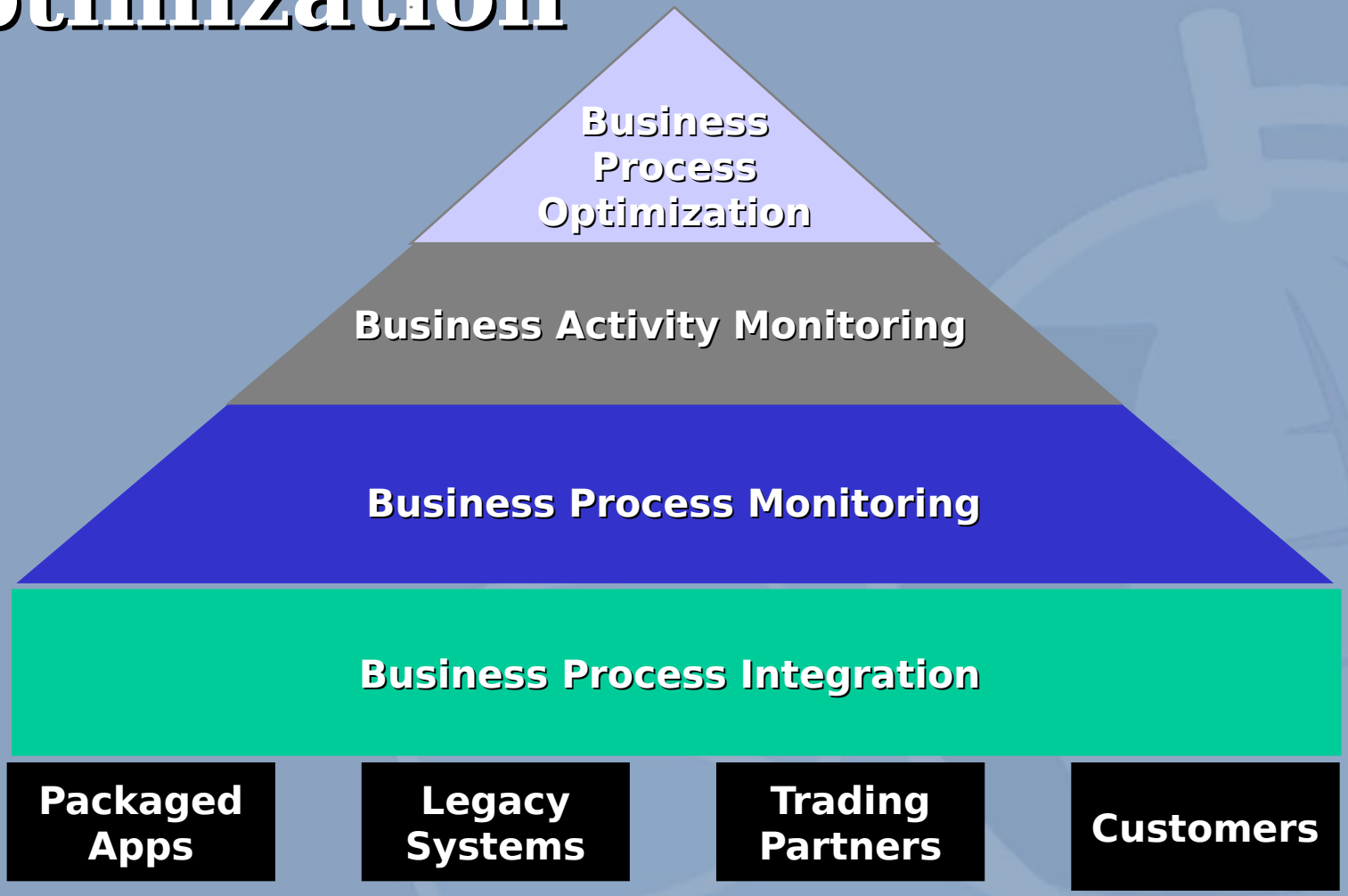
Security, Integration, Developtiont Tools

MANAGE

Grid Infrastructure

Event Storage and Distributi

Business Process Optimization



Product Lifecycle Awareness

Businesses with Intelligence

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Increasing Benefits

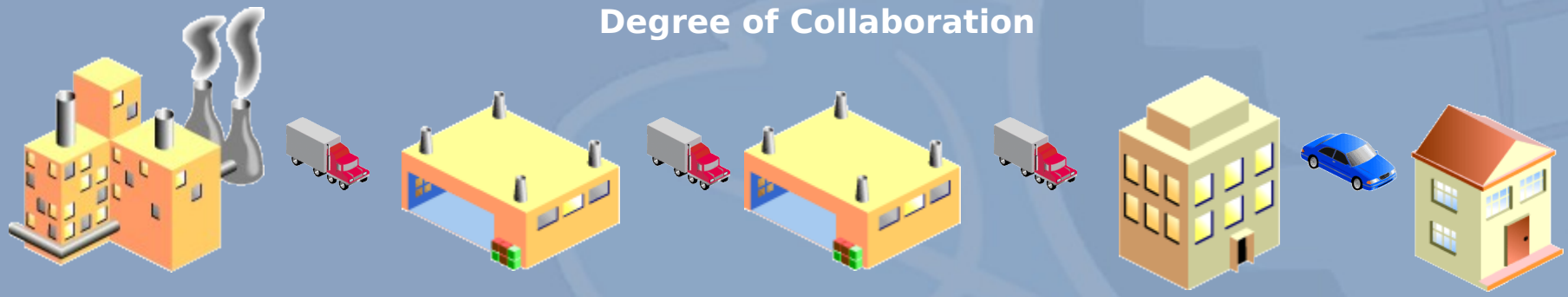
Labor Savings
- Automated data collection with RFID tags/readers.
- Increased product handling efficiency.

Supply Visibility
- Accurate, real-time inventory visibility.
- Inventory location.
- Inventory history.

Demand Visibility
- Quantity and frequency of product purchases.
- Date, time and locations of purchases.

Product Intelligence
- Analysis of aggregate data over time.
- Supply trends.
- Demand trends.
- Key performance indicators.

Degree of Collaboration



Manufacturing plant | Manufacturing DC | Retail DC | Retail Warehouse – Retail Store | Consumer

Oracle Sensor-Based Services

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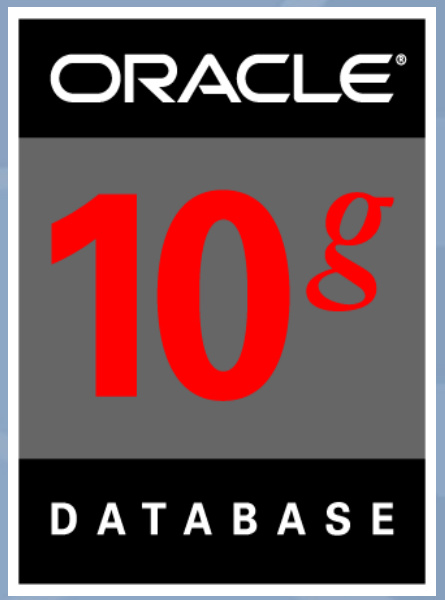
Enabling the Real-Time Enterprise



RFID:
From Opportunity to Reality

the Planning Process

80/20

Key Issues

- **The Difference is in the Planning**
  - **RFID is *only* a data delivery technology.**
- **Consider RFID in the Context of Business Processes**
  - **What Data can be on the Tag unique to your needs, i.e., How are chemicals different from spare parts?**
  - **What processes are unique?**

Key Issues

- **If you are at 99% accuracy and RF gets you to 99.5% -- Worth it?**
- **Consider situation where process discipline critical but difficult to achieve with barcode**
- **What unique physical condition exists that makes RF beneficial?**
- **How much *granularity* does the process need?**

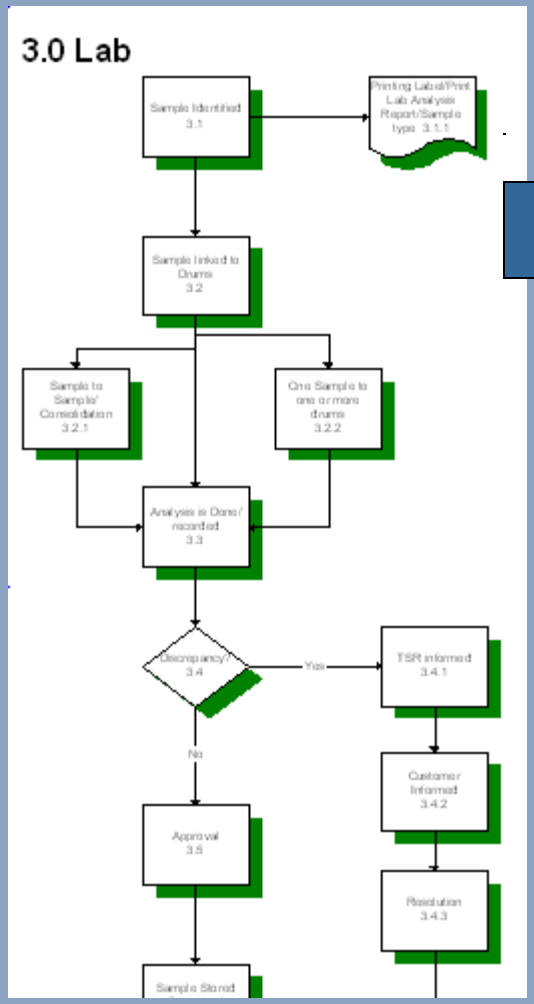
The Function of SCM

- To Control and Anticipate
  - Deadlines
  - Materials with Processes
  - Distribution
  - Responsibility

Function of EMS

- To Measure and Integrate:
  - Logistics
  - Security
  - Emissions
  - Safety
  - Compliance Data

The Requirements Process



3.2.1 Sample to Sample/Consolidation

Description

...are tied back to drums. The relationship c...y, one sample is taken for a group of drums ...samples for analysis. This is known as a cor... decanting possibilities. The lab will con... constituents will react in terms of compatibility. In th... from the composite for analysis. If it is approved, t... process. If it is not approved, one of the container... unacceptable, like PCBs. It is then necessa... out which container has that constituent.

Business Rules

- Consolidated samples will maintain their original s...
- The new sample taken from the composite sample... the remaining samples will be tied to it.
- The new sample taken from the composite sample... or a code to indicate that it is a composite sample.
- This will be recorded in the sample consolidation c...

Screens

- Sample screen

Reports

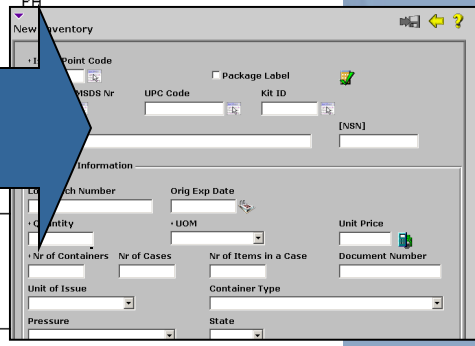
- None

Interfaces

- None

General Business Rules/Constraints

FUNCTION	RULE/CONSTRAINT
Add	Records are not added from this screen.
Modify	Records can be modified
Delete	Records can be deleted
Search By	▪ Manifest Number ▪ Generator ▪ Sample Number ▪ Container Number ▪ Group Number
Advanced Search	▪ Flash Point ▪ BTU by range ▪ PH
Filter	
General	



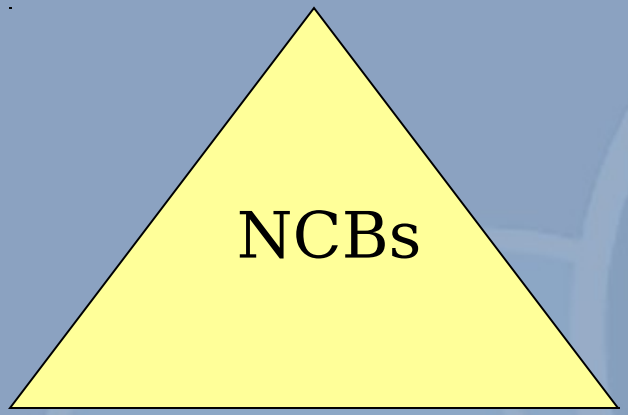
Requirements Developer Specification Product

Planning Concept Approach

Activity	**Chem placement in locker**
Concern	**Compatibility**
Data Need and Relationships	**Chem compatibility list**
Physical Scene	**Locker shelf**
RF Benefit	**Auto alert**

Security Application

Account



Aggregate

Assess

Account

- Chemical Inventory
- Pharmacy Model
- People and Places

- Sensor Based Monitoring

Aggregate

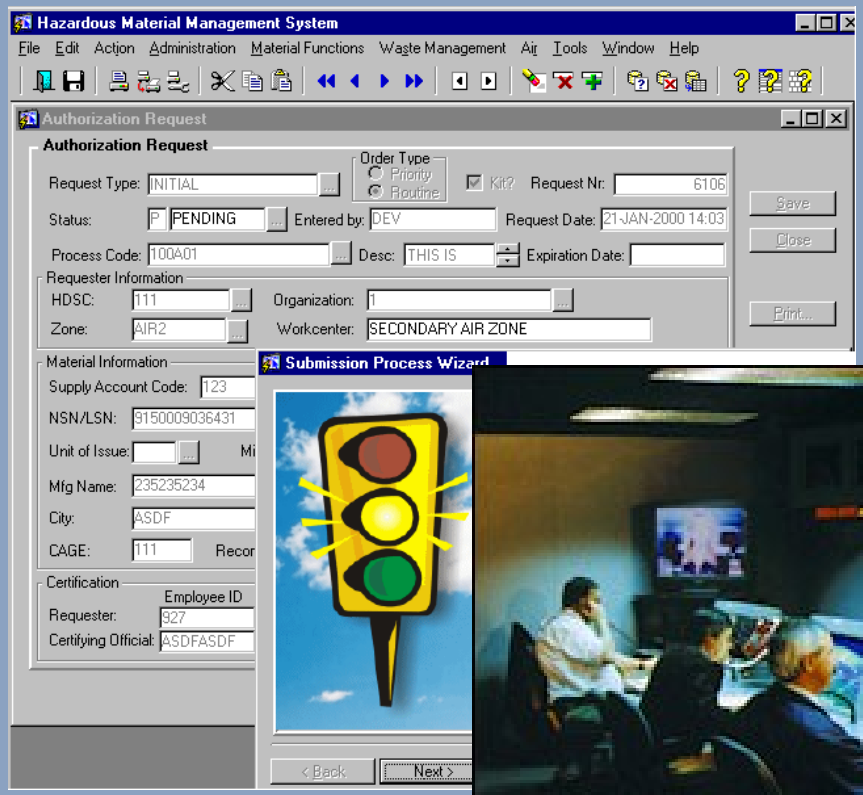
MAYTrack

- Web Connectivity
- Secure Data Transfer
- Rapid Bulk Data Collection

Assess

- Monitor Key Actions
- Small Events Add Up
- Create Indicators
- “Traffic Light” Model

- Real Time Data



Ready, Set, Go.

- 46,000 Suppliers in the DoD. This Policy touches all of them.
- DoD has spent $100 Million over the last ten years on RFID
- Must define the right business logic on top of the base capability RFID provides.

Meeting the Challenge

EnvironMax™

- Know More
  - **Real-time supply chain visibility**
- Do More
  - **Automated data collection**
  - **Business process transformation**
- Spend Less
  - **Shrinking budgets, increased security**
  - **Immediate access to accurate global information**
  - **Low integration, implementation, maintenance cost**

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